

REMARKS

Figures 1, 2A, 2B, and 3 are objected to as not containing the legend "Prior Art." The drawings are amended herein to add the legend to the drawings. It is believed that the objection to the drawings is overcome. In item 4 of the Office Action, the drawings are also objected to with regard to proper labeling in accordance with MPEP section 608.02 (g). The section of the MPEP refers to the labeling of Prior Art drawings. It is believed that the amendments to the drawings, adding the legend "Prior Art" to the drawings, overcomes this objection as well.

The drawings are also objected to as not showing every feature of the invention specified in the claims. In response, new Figures 7, 8, and 9 are submitted herewith for substitution into the application. The new figures illustrate execution of a routine composed of unrepeatable instructions. Corresponding description of the drawings is also added to the specification at page 5, line 14 and at page 7, line 13. The new figures and new description are added to clarify the application. The element of the invention of storing unrepeatable instructions would be understood by one of skill in the art. For example, referring to new Figure 7, Routine 1, including operations A and B, Routine 2, which includes operations C, D, and E, and Routine 3, including operations F and G, are executed serially. The serial storage of the routine addresses is shown in Figure 8, and the claimed trace cache storing addresses corresponding to each instruction is illustrated in Figure 9. The material illustrated in these figures would be readily understood to one of skill in the art from the original disclosure. For example, at least claim 1 clearly discloses the illustrated features of the invention by stating, "... if a routine composed of unrepeatable instructions is to be executed, storing an address corresponding to each instruction in the trace cache according to an order of executed instructions. ...". No new matter is added by the new drawings or the added description in the specification. Furthermore, it is believed that the objection to the drawings is overcome.

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Reconsideration of all of the objections to the drawings is respectfully requested.

The title of the invention has been objected to as not being descriptive. The title is amended herein as suggested by the Examiner. It is believed that the objection to the title is overcome, and reconsideration is requested.

The Abstract of the Disclosure is objected to. The Abstract is amended herein to delete the information referred to by the Examiner. Reconsideration of the objection to the Abstract is requested.

The Brief Description of the Drawings section has been amended such that Figures 1, 2A, 2B, and 3 are referred to as "Prior Art."

The specification is also amended to correct the use of the terms "access times." The word "access" at page 6, line 17 of the specification has been replaced with "execution." At page 3, line 28, the word "And" is replaced with "Also." At page 3, line 29, the word "continuously" is replaced with "contiguously." The Field of the Invention is also amended as suggested by the Examiner.

In view of the amendments to the specification, it is believed that all of the objections are overcome. Reconsideration of the objections is requested.

Claim 1 is objected to because of certain informalities. The claim is amended to comply with the suggestions made by the Examiner. Reconsideration of the objection to claim 1 is requested.

Claim 4 is rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Claim 4 is also rejected under 35 USC § 112, first paragraph, as failing to comply with the enablement requirement. The claim is cancelled. Reconsideration of the rejection of claim 4 under 35 U.S.C. § 112 is requested.

Claims 1 through 3 are rejected under 35 USC § 103 (a) as being unpatentable over Rottenberg, et al. in view of Kiuchi, et al. In view of the amendments to the claims and the following remarks, the rejections are respectfully traversed, and reconsideration of the rejections is requested.

Independent claim 1 has been amended to incorporate the subject matter of dependent claims 2 and 3, and claims 2 and 3 have been canceled. As a result, claim 1 now recites the details of the applicant's trace cache loop counters, which include a total iteration loop counter which counts the total number iterations of a routine of repeated instructions, and a current iteration loop counter which keeps track of the current iteration count, that is, the current number of iterations of the routine that have been executed. These features of the invention, now set forth in amended claim 1, are neither taught nor suggested by the cited Rotenberg, et al. and Kiuchi, et al. references, taken alone or in combination.

Rotenberg, et al. teach an approach to using a trace cache. However, Rotenberg, et al. is not related to using a trace cache for repeatedly executing a routine which includes a series of repeated instructions. Rotenberg, et al. do not teach or suggest the applicant's loop counters used in monitoring the number of iterations of a routine and determining when the total number of required iterations have been completed.

Kiuchi et al. is directed to a system for handling execution of repeat instructions. The repeat control circuit 107 of Kiuchi et al. controls repeated execution of instructions. Referring to Figure 2 of Kiuchi et al., which illustrates in detail the Kiuchi, et al. repeat control circuit 107, the repeat count register 207 stores the total number of times the routine is to be repeated. The repeat step register 200 stores the number of steps in the routine to be repeated, and the step count register 204 counts the steps as they are executed. When the step count register 204 and the repeat step register 200 contain the same value, the repeat count register 207 is decremented to indicate the completion of one iteration of the routine. When the repeat count register 207 reaches the value 1, it is concluded that the routine has been executed the required number of times.

This loop control approach taught by Kiuchi, et al. is not the approach set forth in the amended claims. Specifically, Kiuchi, et al. do not teach a current iteration counter which keeps track of the current number of iterations that have been completed. Instead, to keep track of the number of iterations presently completed, Kiuchi, et al. teach decrementing the total number of iterations to be completed. Thus, there is no storage of the total number of iterations of the

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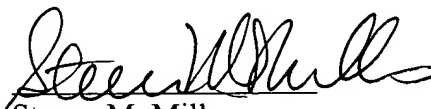
routine that are to be completed. That is, in Kiuchi, et al., in contrast to the applicant's claimed approach, there is no counter that is keeping track of the total number of iterations that are to be executed. In Kiuchi, et al., after the first iteration is completed, the repeat count register 207 is decremented, such that the total number of iterations is no longer stored. Hence, Kiuchi, et al. do not teach the loop counters set forth in the amended claims. Specifically, Kiuchi, et al. do not teach or suggest the total iteration loop counter for counting the total number of iterations of a routine of repeated instructions set forth in the amended claims.

Since neither Rotenberg, et al. nor Kiuchi, et al. teach or suggest the invention set forth in the amended claim, there is no combination of the references which would provide such teaching or suggestion. Since, Rotenberg, et al. and Kiuchi, et al., taken alone or in combination, fail to teach or suggest the invention set forth in the amended claim, it is believed that the claim is allowable over the cited references. Accordingly, reconsideration of the rejection of claim 1 under 35 U.S.C. § 103(a) based on Rotenberg, et al. and Kiuchi, et al. is respectfully requested.

In view of the amendments to the claims and the foregoing remarks, it is believed that the claim pending in the application is in condition for allowance, and such allowance is respectfully solicited. If a telephone conference will expedite prosecution of the application, the Examiner is invited to telephone the undersigned.

Respectfully submitted,

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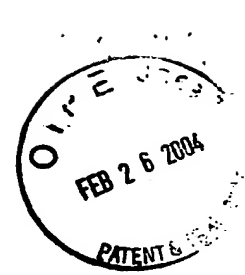


Fig. 1

(PRIOR ART)

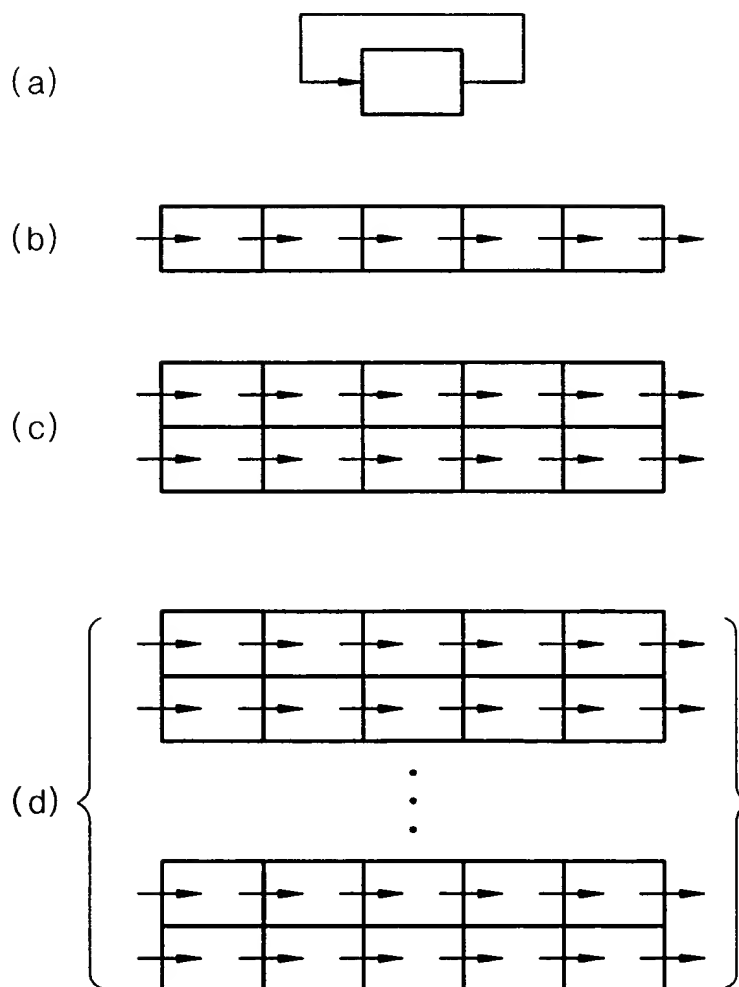




Fig. 2A

(PRIOR ART)

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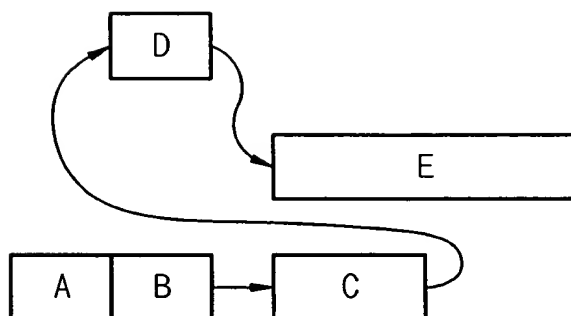
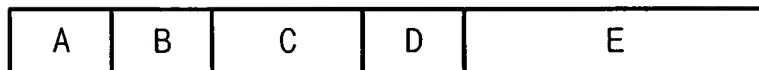


Fig. 2B

(PRIOR ART)

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# Fig. 3

(PRIOR ART)

```
for (i=1 ; i≤30 ; i++)  
{  
    Operation A ;  
    Operation B ;  
}  
for (j=1 ; j≤20 ; j++)  
{  
    Operation C ;  
    Operation D ;  
    Operation E ;  
}  
for (k=1 ; k≤40 ; k++)  
{  
    Operation F ;  
    Operation G ;  
}
```

Routine 1

Routine 2

Routine 3

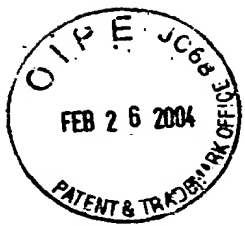
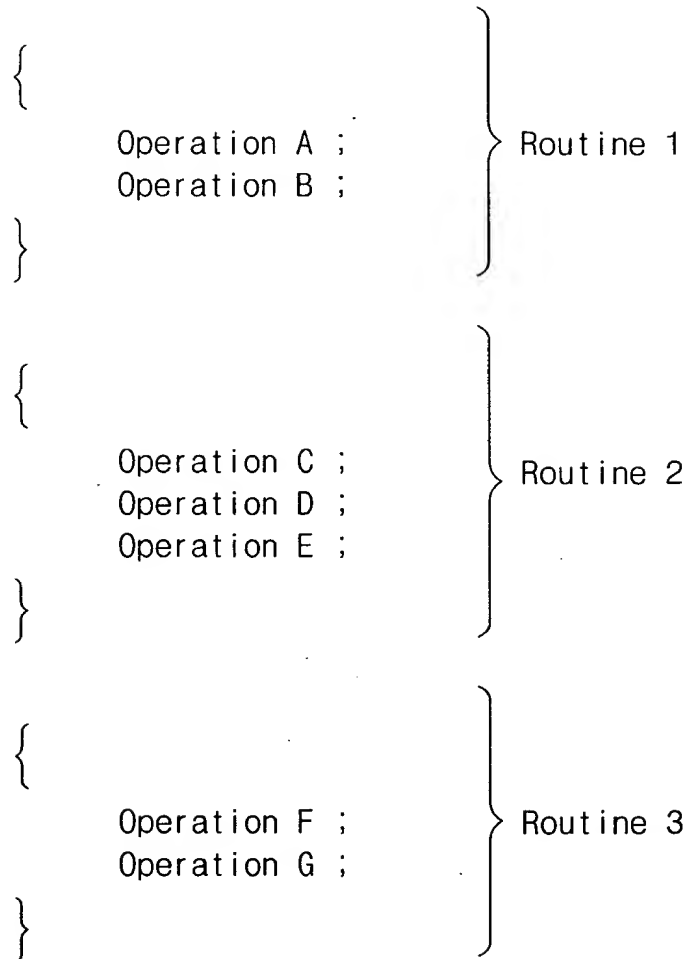


Fig. 7



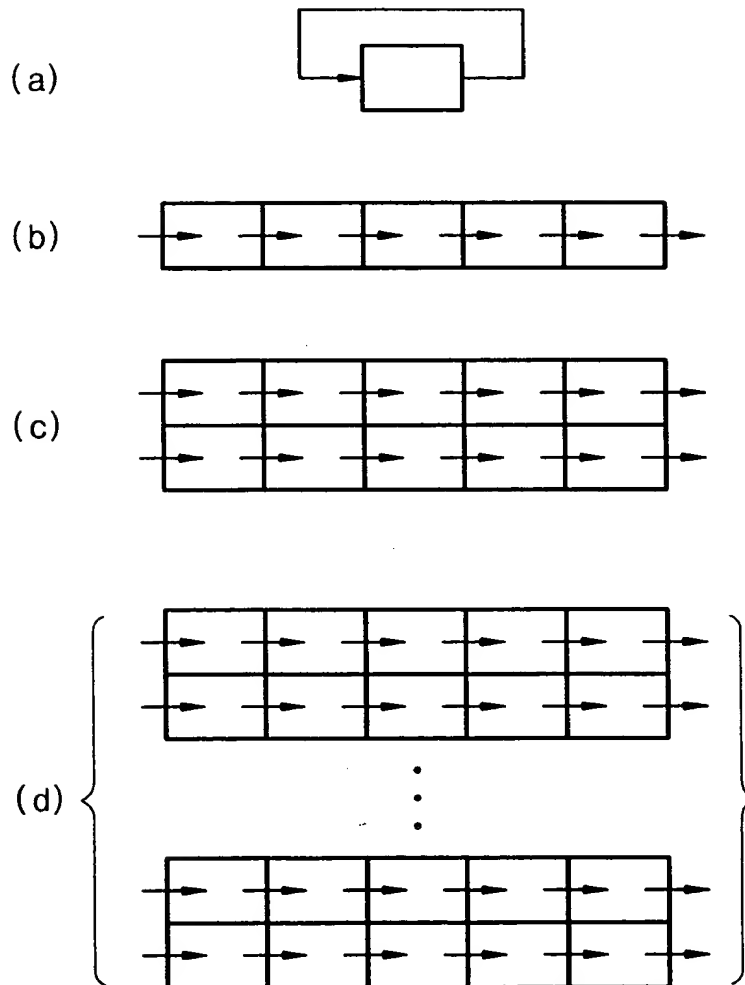






Annotated Sheet Showing Changes

Fig. 1  
(Prior Art)



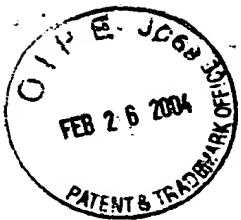


Fig. 2A  
(Prior Art)

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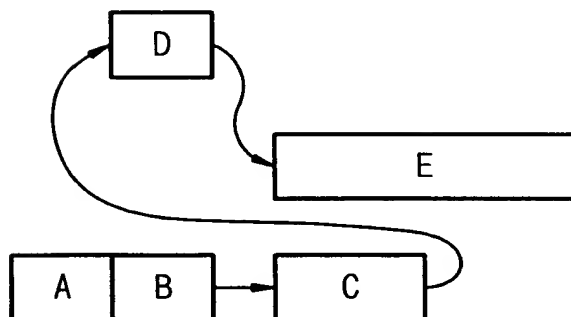


Fig. 2B  
(Prior Art)

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Fig. 3  
(PRIOR ART)

```
for (i=1 ; i≤30 ; i++)  
{  
    Operation A ;  
    Operation B ;  
}  
for (j=1 ; j≤20 ; j++)  
{  
    Operation C ;  
    Operation D ;  
    Operation E ;  
}  
for (k=1 ; k≤40 ; k++)  
{  
    Operation F ;  
    Operation G ;  
}
```

Routine 1

Routine 2

Routine 3